

Name _____
Date _____

Teacher _____
Section _____

Geometry Unit 10: Right Triangles 2009 - 2010

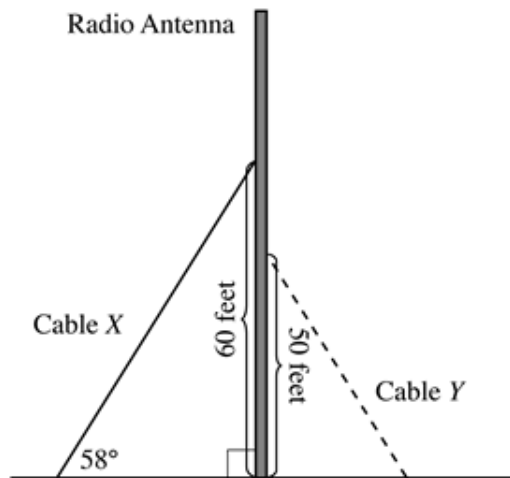
Instructions: For multiple choice questions, select the best answer.

For questions that are not multiple choice, show your work.



1.

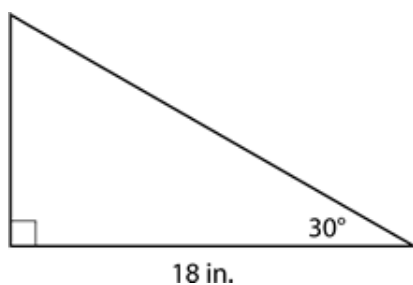
Chen plans to brace a radio antenna with another cable. Cable X is already attached to the antenna at a height of 60 feet and forms a 58° angle with the ground as shown below.



Cable Y will be attached to the antenna at a height of 50 feet. If the two triangles formed by cable X and cable Y are similar, how long in feet must cable Y be? Round your answer to the nearest foot.

2.

A sheet metal worker needs to cut a piece of metal in the shape shown below.

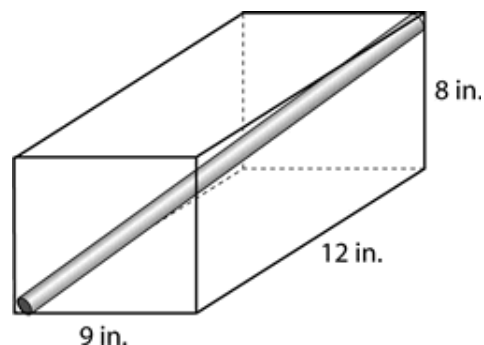


What is the length of the longest side of this triangle?

- A. 9 inches
- B. $6\sqrt{3}$ inches
- C. 18 inches
- D. $12\sqrt{3}$ inches

3.

The packing box shown below is in the shape of a rectangular prism.

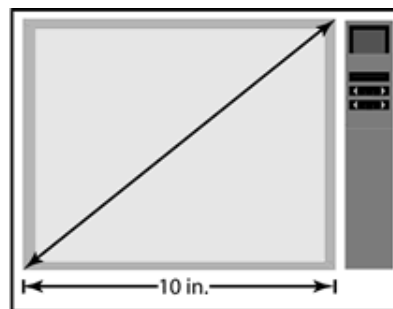


What is the length of the rod that is packed diagonally in the box?

- A. 15 inches
- B. 17 inches
- C. 20 inches
- D. 28 inches

4.

The diagonal of the television screen shown below is 13 inches.

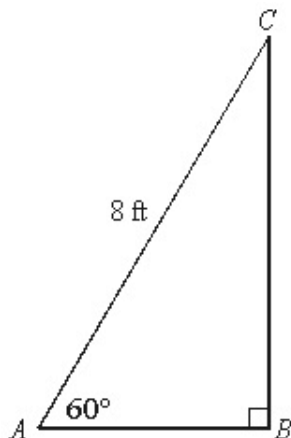


If the television screen is 10 inches in length, which of these is a correct method that could be used to determine x , the height of the television, in inches?

- A. Solve $x^2 = 13^2 + 10^2$ for x .
- B. Solve $13^2 = x^2 + 10^2$ for x .
- C. Solve $10^2 = x^2 + 13^2$ for x .
- D. Solve $13 = x + 10$ for x .

5.

What is the length of \overline{AB} in $\triangle ABC$?



- A. 4 feet
- B. $4\sqrt{2}$ feet
- C. $4\sqrt{3}$ feet
- D. 16 feet

6.

A 25-foot ladder is placed against the side of a building with the bottom of the ladder 7 feet from the base of the building. If the base of the ladder is pulled back an additional 8 feet from the building, how far will the ladder slide down the side of the building?

- A. 4 feet
- B. 7 feet
- C. 8 feet
- D. 15 feet

7.

If 8, 15, 17 is a Pythagorean Triple, which of the following could also be a Pythagorean Triple?

- A. 10, 17, 19
- B. 3, 10, 12
- C. 3, 4, 6
- D. 24, 45, 51

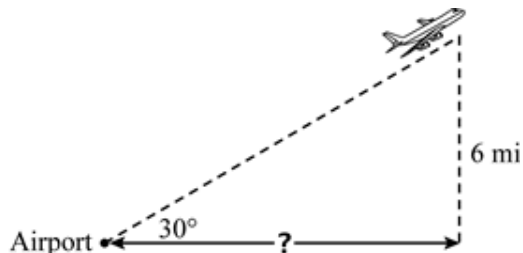
8.

A closet door measures 64 inches by 20 inches. A decorative brace is placed on the door, extending from the upper right corner to the lower left corner. Which is closest to the length of this brace?

- A. 67 inches
- B. 61 inches
- C. 10 inches
- D. 44 inches

9.

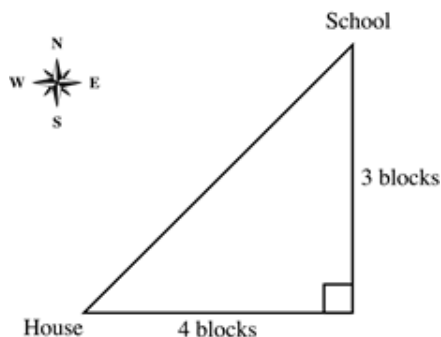
An aircraft takes off and climbs at a constant 30° angle until it reaches an altitude of 6 miles. At that point, what is the plane's horizontal distance from the airport?



- A. 12 miles
- B. 6 miles
- C. 8.4 miles
- D. 10.4 miles

10.

John walks 4 blocks east and 3 blocks north to get to his school, as shown below. How many fewer blocks would John have to walk from his house to school if he were able to walk diagonally between the two locations?



- A. 1
- B. 2
- C. 5
- D. 7

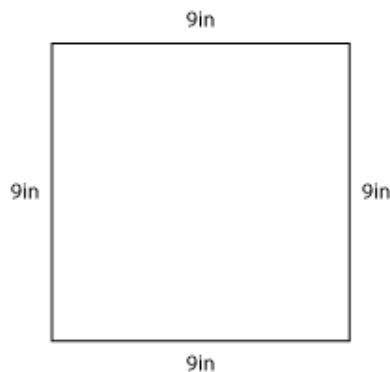
11.

If the legs of a 45° - 45° - 90° triangle have a length of 8 centimeters, what is the perimeter of the triangle?

- A. 24 cm
- B. $24\sqrt{2}$ cm
- C. $16 + 8\sqrt{2}$ cm
- D. $16 - 8\sqrt{2}$ cm

12.

A linen napkin, in the shape of a square, has sides that are 9 inches long. If the napkin is folded along the diagonal, what is the length of the diagonal? (Leave your answer in radical form.)

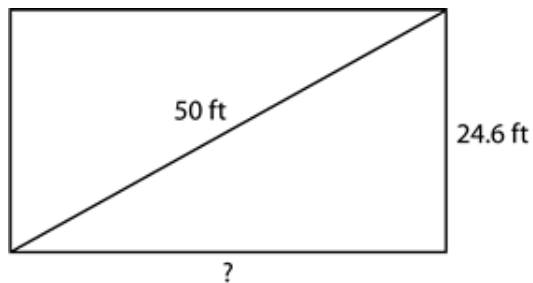


13.

What is the length, to the nearest tenth, of the altitude of an equilateral triangle whose sides have a length of 10 inches?

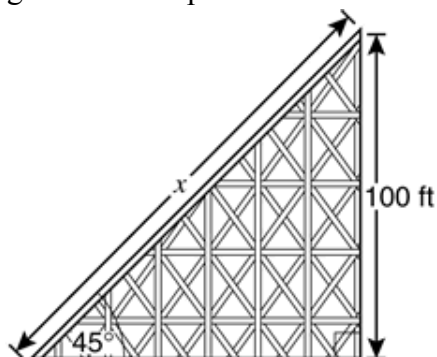
14.

The diagonal of a rectangular lot is 50 feet and one side of the lot measures 24.6 feet. Find the length of the adjacent side of the lot, rounded to the nearest tenth.



15.

Rob wants to design the first section of a roller coaster track. He wants the ramp section to rise at 45° with the horizontal and connect at the top of a segment 100 feet high. Find x , the length of the ramp. Leave as a radical.



16.

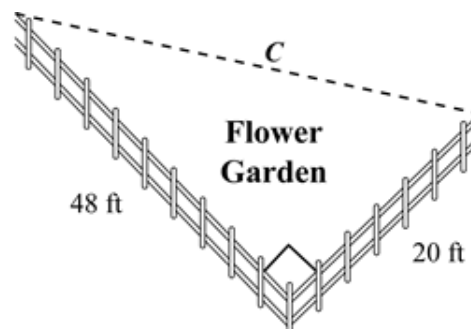
If 21 and 35 are two members of a Pythagorean Triple, what is the third number?

17.

Triangle ABC is a right triangle. Angle B is the right angle. If the measure of angle C is $3x + 7$ and the measure of angle A is $5x + 3$, find the measure of each angle of the triangle.

18.

A corner of a park has been set aside for a flower garden. The park's fencing along the shorter leg is 20 feet and the length along the longer leg is 48 feet.



A. Write an expression that could be used to determine C , the amount of fencing needed to enclose the flower garden.

B. How much more fencing will be needed?

C. If the park board votes to increase the length of the shorter leg to 30 feet and the length of the longer leg to 72 feet, how much additional fencing would be needed for the diagonal portion of the fence that completes the enclosure for the garden?

Answer Key

#	Item ID	Key	TEKS	Stimulus
1	M0G3069463	See attached Rubric or Checklist	G.11C - 11M8	-
2	MG1050595RX	D	G.5D - 11M6	-
3	MG1050598RX	B	G.11C - 11M8	-
4	M0G3046124	B	G.8C - 11M8	-
5	MG1050654RX	A	G.5D - 11M6	-
6	MG1050680RX	A	G.8C - 11M8	-
7	M0G3234366	D	G.11C - 11M8	-
8	MG1087636D	A	G.8C - 11M8	-
9	MG1087662D	D	G.8C - 11M8	-
10	MG1087671D	B	G.8C - 11M8	-
11	M0G3061056	C	G.5D - 11M6	-
12	MG1087627D	$\sqrt{162}$ or $9\sqrt{2}$	G.8C - 11M8	-
13	MG1087642D	8.7 inches	G.8C - 11M8	-
14	MG1087658D	43.5 feet	G.8C - 11M8	-
15	MG1087674D	$100\sqrt{2}$	G.5D - 11M6	-

#	Item ID	Key	TEKS	Stimulus
16	MG1087678D	28	G.5D - 11M6	-
17	MG1089826D	A = 53, C = 37 and B = 90.	G.2B	-
18	MG1050756RX	See attached Rubric or Checklist	G.5D - 11M6	-

Checklist List

1)

59

$$\sin 58 = \frac{50}{\text{hyp}} = 58.95892$$

18)

A. $20^2 + 48^2 = c^2$

B. 52 feet

C. 78 feet

Rubric List**18)**

3	The response shows full understanding of the essential mathematics applicable to the task and a sound approach toward solution that includes logical reasoning and appropriate conclusions. Computation and procedures used are generally accurate, but the response may contain minor computational or procedural flaws that do not detract from evidence of full understanding.
2	The response shows a satisfactory understanding of the essential mathematics applicable to the task, but reasoning may not be completely clear, and there may be minor flaws in computation and/or use of procedures as a result of carelessness or non-essential misunderstandings. The flaws do not detract from evidence of satisfactory understanding. A score of 2 may also be earned if the response is partially correct but some aspect of the task is omitted.
1	The response indicates limited understanding of the essential mathematics applicable to the task. While an effort is made to address the task, omissions and/or errors related to insufficient mathematical knowledge or incorrect application of skills or procedures bring into question that student's ability to deal successfully with tasks of this type.
0	The response indicates no understanding of the essential mathematics applicable to the task, or there is no response.